

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification					Date: February 1999				
APPROPRIATION/BUDGET ACTIVITY RESEARCH, DEVELOPMENT, TEST& EVALUATION, NAVY/BA-4					R-1 ITEM NOMENCLATURE: .Surface & Shallow Water Mine Countermeasures/0603502N				

COST (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total P.E. Cost	70.143	88.211	82.465	89.610	69.063	42.309	61.542	67.824	N/A	
Remote Minehunting Systems Q0260/Q2387	16.607	26.767	35.231	42.018	25.425	11.394	17.339	17.355	N/A	N/A
Integrated Combat Weapons Systems Q1233/Q2388	10.264	11.725	5.011	7.929	5.982	3.471	3.476	3.481	N/A	N/A
Assault Breaching Systems Q2131	23.957	28.321	15.298	15.689	15.954	10.083	29.350	35.912	CONT.	CONT.
Unmanned Underwater Vehicle V2094	19.315	21.398	26.925	23.974	21.702	17.361	11.377	11.076	CONT.	CONT.
Quantity of RDT&E Articles & cost		1-NMRS				1-LMRS				

A. Mission Description and Budget Item Justification: The program provides for developments to combat the threat of known and projected foreign mines against U.S. Naval and merchant shipping in harbors, channels, choke points, sea lines of communications and amphibious and other fleet operating areas. It develops: (1) systems and support for systems which will detect, localize and classify moored, bottom, and close-tethered mines for use in Mine Countermeasure (MCM) MCM-1 Class, Mine Hunter Coastal (MHC) MHC-51 Class, and other surface ships; (2) systems for detection, neutralizing and sweeping mines from shallow water, very shallow water, surf zones, and beach landing craft zones in support of amphibious operations; (3) the integration and improvement of the combat system suite on MCM and MHC ships; (4) near-term and long-term Unmanned Undersea Vehicle (UUV) systems for clandestine mine reconnaissance.

B. Program Change Summary:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
FY 1999 President's Budget:	71.146	73.491	76.109
Appropriated Value:	73.174	80.491	
Adjustment to FY 1998 Appropriated Value/ & FY 1999 President's Budget:	(3.031)	7.720	6.356
FY 2000 President's Budget Submit:	70.143	88.211	82.465

Funding: FY98: : Congressional Undistributed Reductions (-\$1.880) and SBIR Reductions (-\$1.151); FY99: (-\$1.260) General Reductions, (+\$8.980) RMS; FY00: (-\$1.032) General Reductions, (-\$.080) Inflation reduction, (+\$10.449) RMS restructure, (+\$7.300) Organic MCM, (-\$8.575) ICWS, (-\$1.706) Misc. Adjustments;

Schedule: RMS – RMS (V)4 MSII will occur in 2Q/99 and RMS (V)4 MSIII will occur in 3Q/04.

Technical: Not Applicable.

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Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY/BA-4	Program Element Name & No. Surface & Shallow Water Mine Countermeasures/0603502N	Project Name and Number. Remote Minehunting Systems/Q0260

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	16.607	26.767	35.231	42.018	25.425	11.394	17.339	17.355	N/A	N/A
RDT&E Articles Qty										

A. Mission Description and Budget Item Justification: The Remote Minehunting Systems (RMS) Program develops a new remotely operated minehunting system for surface ships. This effort includes development of a remote vehicle, mine-hunting sensors, mission command and control, and integration into the DDG-51 Class Flight IIA Baseline 7 and AN/SQQ-89(V)15 Undersea Warfare Combat System.

## (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

### 1. (U) FY 1998 ACCOMPLISHMENTS

- (U) (\$8.102) Continue development and testing of RMS system (V)3.
- (U) (\$7.655) Established design budget interface control documents for DDG-51 Flight IIA integration.
- (U) (\$ .850) Prepared documentation for Milestone II and procurement package for RMS (V)4 contract.

### 2. (U) FY 1999 PLAN

- (U) (\$ 4.500) Close out RMS (V)3 effort.
- (U) (\$ .525) Complete all documentation and conduct Milestone II.
- (U) (\$21.405) Begin development of RMS (V)4 to procure Engineering Development Models (EDMs) including new sensor development.
- (U) (\$ .337) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

### 3. (U) FY 2000 PLAN

- (U) (\$14.397) Continue development and testing of the RMS EDMs.
- (U) (\$18.543) Continue development of new sensor suite.
- (U) (\$ 2.291) Begin DDG51 Flight IIA ship integration.

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APPROPRIATION/BUDGET ACTIVITY RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY/BA-4	Program Element Name & No. Surface & Shallow Water Mine Countermeasures/0603502N	Project Name and Number. Remote Minehunting Systems/Q0260

## B. Other Program Funding Summary

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Complete</u>	<u>Total Cost</u>
	-0-	-0-	-0-	-0-	62.923	54.190	52.570	39.139	CONT.	CONT.
RMS Contingency Systems OPN LI#262200										

C. Acquisition Strategy: For the AN/WLD-1(V) (RMS (V)4), the government plans to issue a sole source contract to Lockheed Martin. The government will work with the contractor in an IPT environment to refine the specification, Statement of Work, and Request for Proposal (RFP) for the sensor suite sub-contracts. The IPT pricing will validate the cost estimates against Navy requirements. The government intends to pursue commonality between the AN/AQS-20 and the AN/WLD-1(V). The AN/WLD-1(V) contract procurement plan is for the development of one (1) EDM with an option for a second EDM, system interactive electronic technical manual (IETM), provisioning data, technical drawings and data, engineering services. The AN/WLD-1(V) contract will be a negotiated Cost Plus Incentive Fee with performance and cost incentives for the basic effort and the options associated with the development effort.

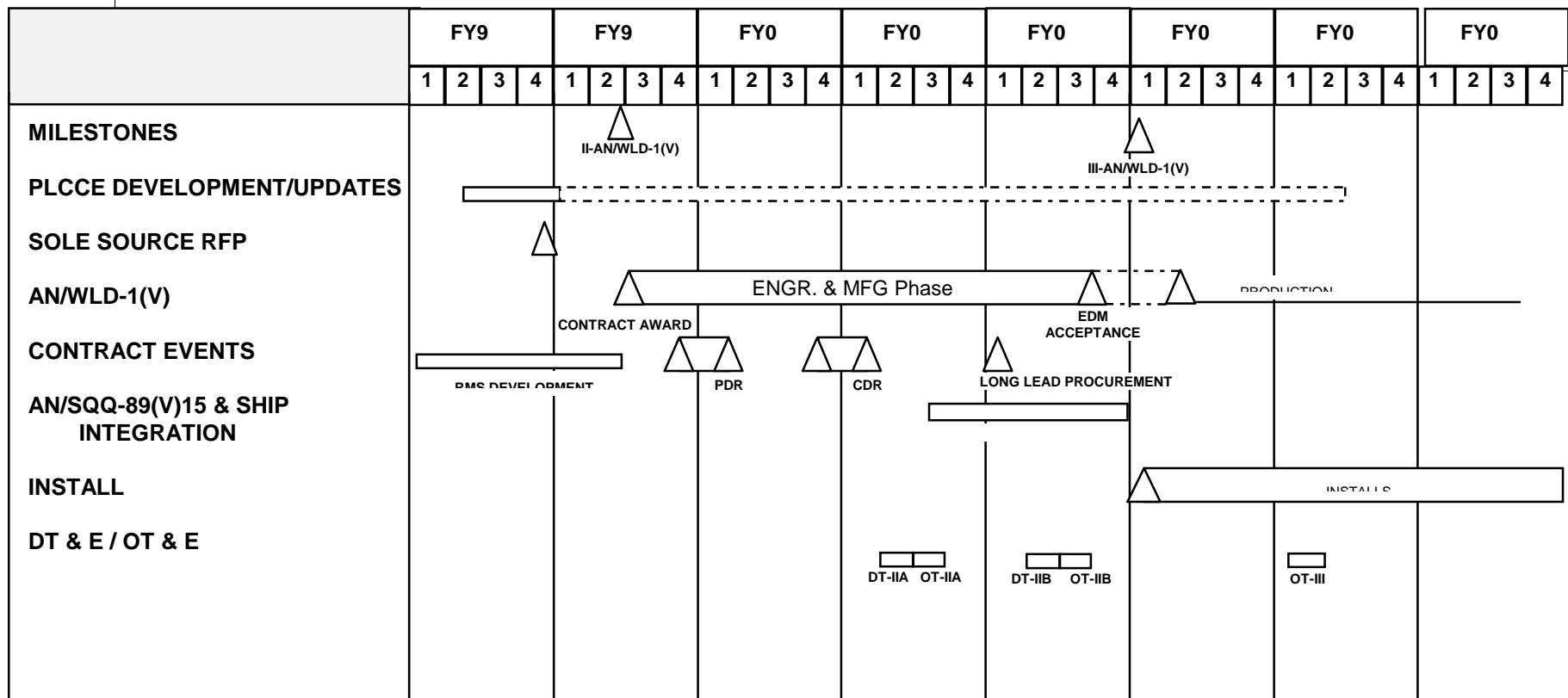
C. Schedule Profile: See Attached.

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APPROPRIATION/BUDGET ACTIVITY RESEARCH, DEVELOPMENT, TEST & EVALUATION, NAVY/BA-4	Program Element Name & No. Surface & Shallow Water Mine Countermeasures/0603502N	Project Name and Number. Remote Minehunting Systems/Q0260

## RMS FY99 PROGRAM SCHEDULE



PDR-Preliminary Design Review – Parts that impact the ship integration must be completed at start of PDR.  
 CDR-Critical Design Review – Parts that impact the ship integration must be completed at start of CDR.  
 LRIP-Low Rate Initial Production  
 DT&E – Developmental Test and Evaluation  
 OT&E – Operational Test and Evaluation

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N, BA-4	PROGRAM ELEMENT NAME AND NUMBER: Surface & Shallow Water Mine Countermeasures, 0603502N	PROJECT NAME AND NUMBER: Remote Minehunting Systems, Q0260

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Lockheed Martin	21.8	3.5								
Primary Hardware Development	C/CPAF	TBD		12.2	TBD	18.1	TBD			CONT.	CONT.	N/A
Primary Hardware Development	SS/BOA	Raytheon	2.1									
Primary Hardware Development	WR	NSWC, CSS	81.1	.6	N/A	2.5	N/A			CONT.	CONT.	N/A
Primary Hardware Development	WR	NUWC, Keyport	.5									
Primary Hardware Development	SS/PR	ARL/UT	2.2									
Ancillary Engineering												
Licenses												
Tooling												
GFE												
Award Fees			4.8	1.6	N/A	2.8	N/A			CONT.	CONT.	N/A
Subtotal Product Development			112.5	17.9		23.4						
Remarks:												
Development Support Equipment	C/CPFF	TBD										
Software Development	C/CPFF	Lockheed Martin	2.3									
Software Development	C/CPFF	TBD		2.9	TBD	3.7	TBD			CONT.	CONT.	N/A
Training Development												
Integrated Logistics Support	WR	NSWC, CSS		1.1	N/A	1.3	N/A			CONT.	CONT.	N/A
Technical Data												
GFE												
Subtotal Support			2.3	4.0		5.0						

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N, BA-4	PROGRAM ELEMENT NAME AND NUMBER: Surface & Shallow Water Mine Countermeasures, 0603502N	PROJECT NAME AND NUMBER: Remote Minehunting Systems, Q0260

Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	Fy00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPAF	Lockheed Martin	3.0									
Developmental Test & Evaluation	C/CPFF	TBD		1.2	TBD	1.6	TBD			CONT.	CONT.	N/A
Developmental Test & Evaluation	WR	NSWC, CSS	12.2	.6	N/A	.6	N/A			CONT.	CONT.	N/A
Developmental Test & Evaluation	SS/PR	ARL/UT	.07									
Developmental Test & Evaluation	Various	Various	.1									
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			15.4	1.8		2.2						
Remarks:												
Contractor Engineering Support												
Government Engineering Support	WR	NSWC, CSS	18.1	1.8	N/A	2.5	N/A			CONT.	CONT.	N/A
Government Engineering Support	Various	Various	14.5									
Program Management Support	Various	Various		1.2	N/A	2.0	N/A			CONT.	CONT.	N/A
Program Management Personnel												
Travel	Various	NAVSEA		.06	N/A	.06	N/A			CONT.	CONT.	N/A
Labor (Research Personnel)												
Overhead												
Subtotal Management			32.6	3.1		4.6						

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N, BA-4	PROGRAM ELEMENT NAME AND NUMBER: Surface & Shallow Water Mine Countermeasures, 0603502N	PROJECT NAME AND NUMBER: Remote Minehunting Systems, Q0260

Remarks:											
Total Cost			162.8	26.8		35.2					
Remarks:											

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Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	3.193	11.725	5.011	7.929	5.982	3.471	3.476	3.481	N/A	44.273
RDT&E Articles Qty										

Mission Description and Budget Item Justification: (1) Closed Loop Degaussing (CLDG) to improve survivability of mine countermeasures ships; (2) ICWS is a series of major, incremental block upgrades to the current combat systems. It provides the MCM/MHC Class Ships an affordable and fully integrated combat weapons system, which will improve mission execution efficiency, dramatically reduce life-cycle costs, and facilitate changes to meet future mission requirements. (3) Medal is a software segment on the Global Command and Control System – Maritime (GCCS-M). MEDAL provides mine and warfare planning and evaluation tools and databases to the MCM Commander. C4I connectivity to the rest of the fleet is provided through GCCS-M. Design and implement MIW C4I Surveillance and Reconnaissance (C4ISR) architecture to fully integrate and optimize organic and dedicated systems within the Navy's C4ISR architecture.

## (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

### 1. (U) FY 1998 ACCOMPLISHMENTS

#### (U) CLDG

- (U) (\$ .800) Completed TECHEVAL.
- (U) (\$ .200) Started OPEVAL.
- (U) (\$ .295) Prepared for Milestone III.

#### (U) ICWS.

- (U) (\$ .496) Completed architecture study, life cycle cost model, and preliminary design for integrated system.

#### (U) MEDAL

- (U) (\$ .346) Development of tactical algorithms for Build 7.
- (U) (\$ .100) Systems engineering.
- (U) (\$ .231) Build 6 test and evaluation.
- (U) (\$ .725) Configuration Minefield Theory Analysis.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

## 2. (U) FY 1999 PLAN

### (U) CLDG

- (U) (\$1.592) Complete OPEVAL. TECHEVAL and OPEVAL have been extended to accommodate ship schedule and ascertain whether range frequency threshold and goal have been met.
- (U) (\$ .100) Complete all documentation required for MSIII.
- (U) (\$ .103) Conduct MSIII.

### (U) ICWS

- (U) (\$ .590) Complete integration of unique SQQ-32 trainer functionality into SSQ-94 trainer.
- (U) (\$ .170) Develop in-depth MNV signature knowledge and begin development of silencing modifications.
- (U) (\$ .250) Complete tasks associated with SLQ-48 obsolescence issues to reduce life-cycle costs.
- (U) (\$3.365) Conduct software design/code/test and hardware design/fabrication for sonar subsystem.

### (U) MEDAL

- (U) (\$ .250) Build 7 test and evaluation.
- (U) (\$ .250) Build 8 platform conversion.
- (U) (\$1.979) Begin development of Build 8 Core capabilities, tactical algorithms and software upgrades.
- (U) (\$1.747) Define/develop Build 9.
- (U) (\$ .315) Systems Engineering
- (U) (\$ .214) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

### (U) MCS/MCM Ship Studies

- (U) (\$ .500) Initiate study of alternatives to replace or retain MCS-12 (USS INCHON) as the only fleet mine countermeasures support ship.
- (U) (\$ .300) Initiate study of alternatives for follow-on class of surface mine countermeasures ships.3.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

## 2. (U) FY 2000 PLAN

### (U) MEDAL

- (U) (\$ .300) Build 8 test and evaluation.
- (U) (\$1.045) Complete Build 9 development.
- (U) (\$ .166) Build 10 core capabilities definition.

### (U) ORGANIC MCM C4I

- (U) (\$1.700) Develop MIW C4ISR data requirements for data fusion file format, structure and transmission requirements for (organic/dedicated) MIW systems.
- (U) (\$1.800) Develop and conduct MOD/SIM to optimize organic and dedicated systems.

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Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

## B. Other Program Funding Summary

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Complete</u>	<u>Total Cost</u>
(U) OPN (CLDG)										
Line 262200	-0-	2.893	3.050	4.998	5.455	3.367	3.473	3.523	CONT.	CONT.
(U) OPN (ICWS)										
Line 262200	-0-	9.625	10.516	5.101	6.896	4.637	3.922	4.075	CONT.	CONT.

C. Acquisition Strategy: As a series of major incremental upgrades to the current systems, the original equipment manufacturers have teamed to develop the changes. FY 98 tasks are being accomplished under existing BOAs. MEDAL is an evolutionary program with a development cycle of one year per software build.

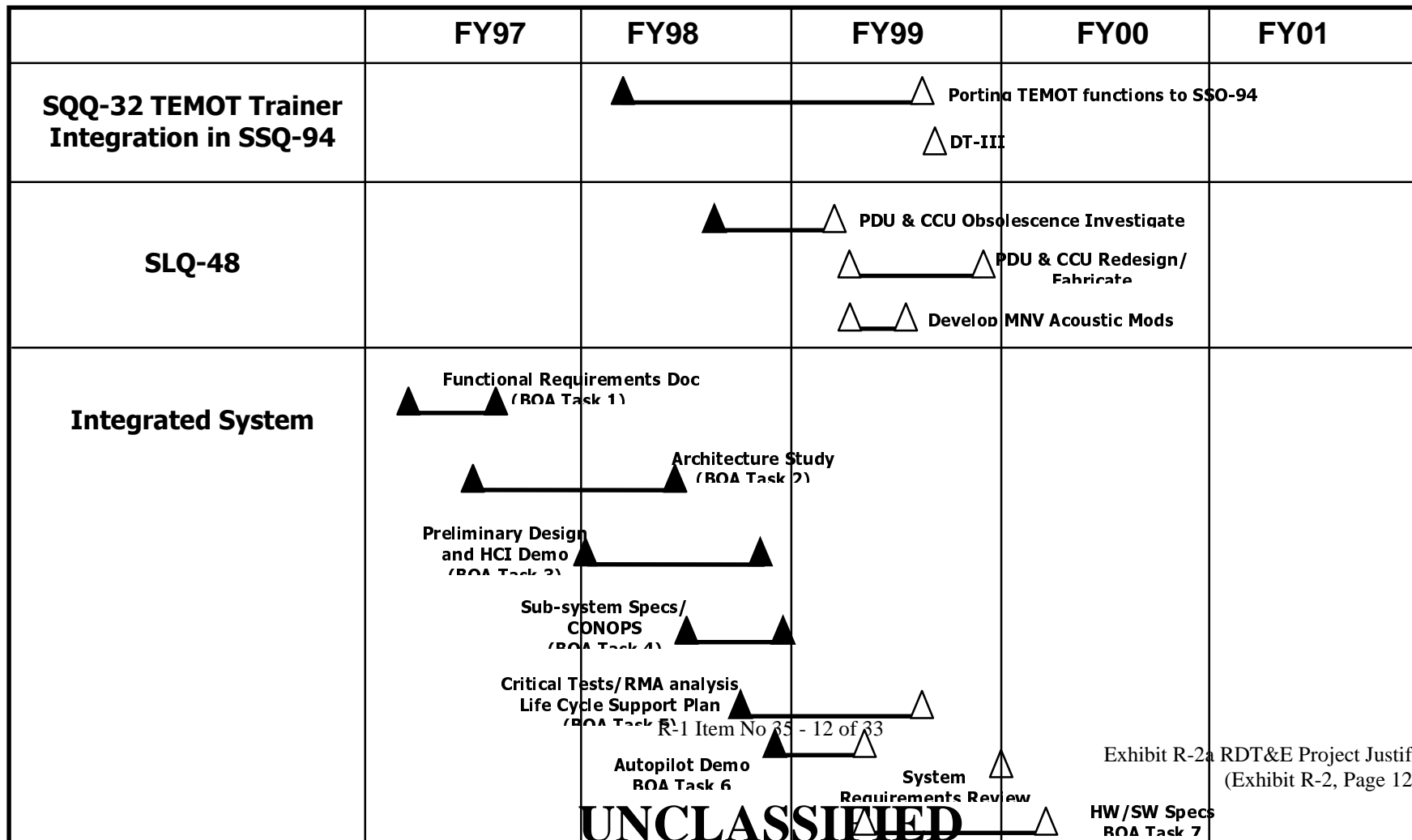
D. Schedule Profile: See Attached.

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Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

## ICWS



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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

## MEDAL

	FY97	FY98	FY99	FY00	FY01
<b>Develop, test, and field sequential Builds of MEDAL with increased capabilities</b>	▲ Build 5	Build 6 △	Build 7 △	Build 8 △	△ Build 9  Build 10 △

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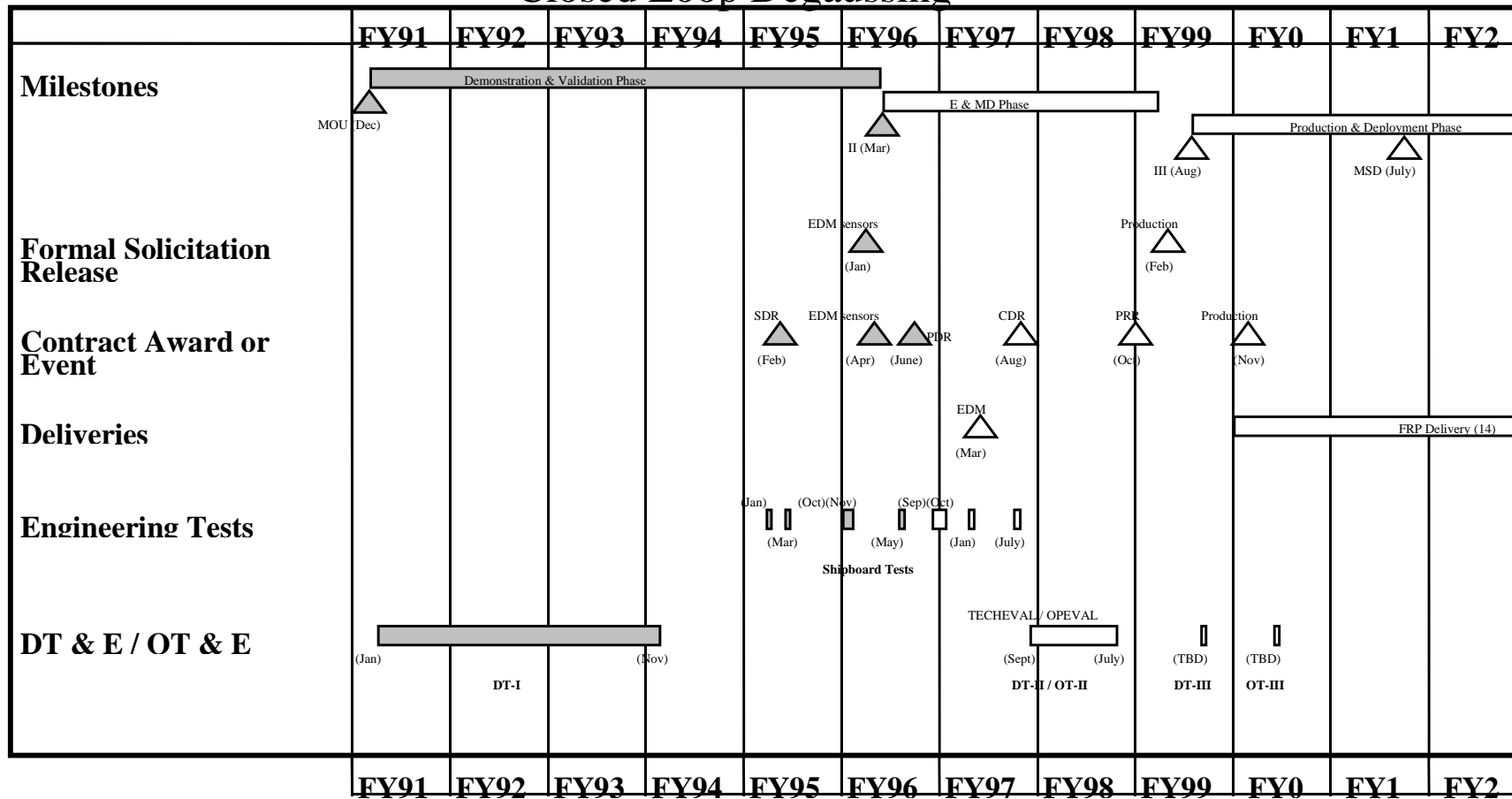
Exhibit R-2a RDT&E Project Justification  
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.	

## Closed Loop Degaussing



NOTES:

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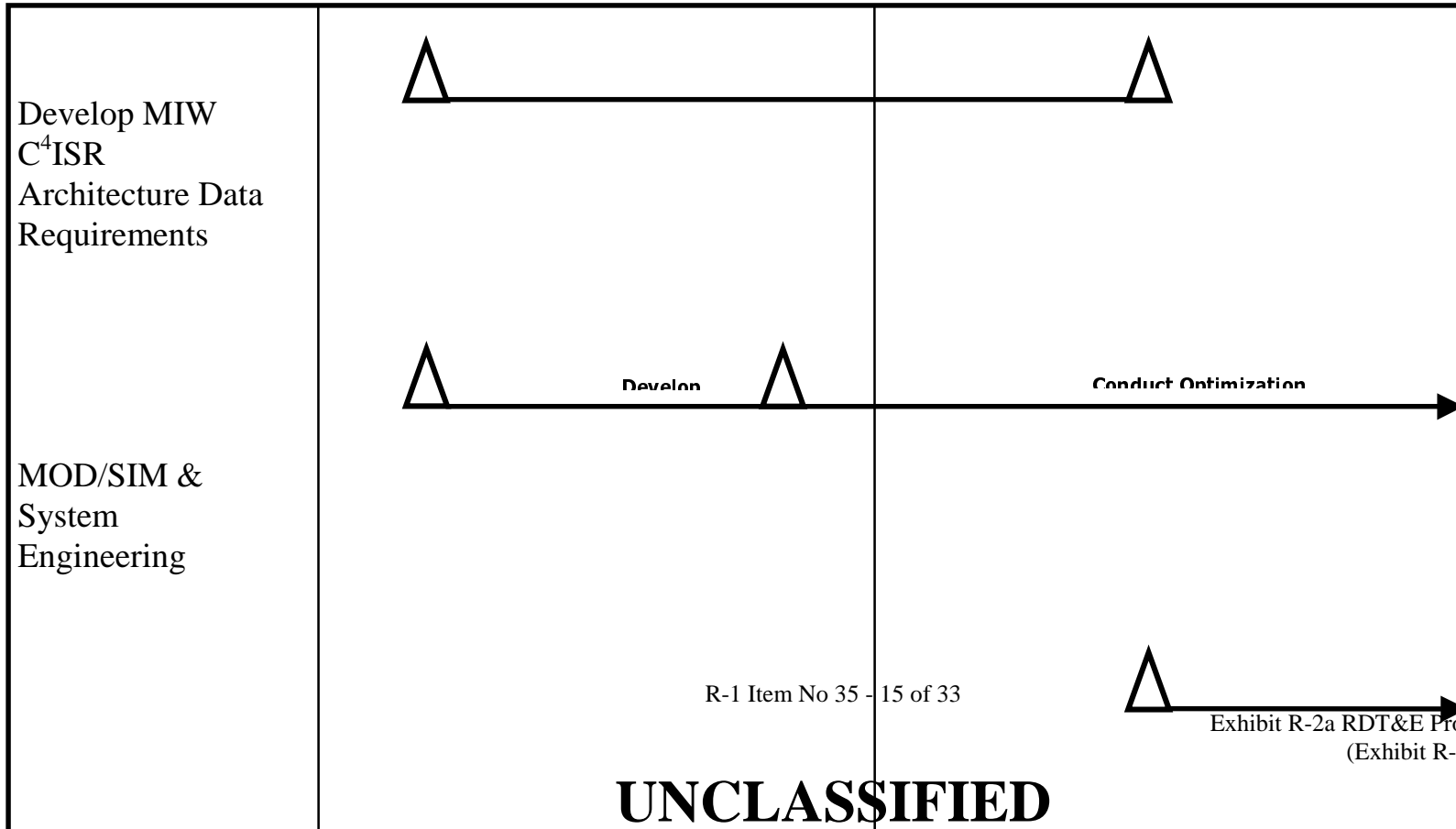
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N/BA-4	Program Element Name & No: Surface & Shallow Water Mine Countermeasures, 0603502N.	Project Name and Number: Integrated Combat Weapons Systems/Q1233.

## ORGANIC MCM C<sup>4</sup>I

FY00

FY01



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Exhibit R-3 Cost Analysis										Date: February 1999	
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N			Program Element Name & No. Surface & Shallow Water Mine Countermeasures/ 0603502N				Project Name and Number. Integrated Combat Weapons Systems/Q1233				

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPAF	Raytheon		1.0	1 <sup>st</sup> Qtr							
Ancillary Hardware Development												
Systems Engineering	Various	NSWC, CD/ NRAD, SD	.1	2.6	1 <sup>st</sup> Qtr	1.7	1 <sup>st</sup> Qtr			CONT.	CONT.	N/A
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			.1	3.6		1.7						
Remarks:												
Development Support Equipment												
Software Development	Various	NSWC, CSS	.3	5.1	1 <sup>st</sup> Qtr	2.1	1 <sup>st</sup> Qtr	2.6	Qtr	CONT.	CONT.	N/A
Training Development	Various	NSWC, CD		.05	N/A	.2		.2				
Integrated Logistics Support	CPAF	Raytheon, RI		.4		.2		.2				
Configuration Management	Various	Various		.2	N/A	.1		.2				
Technical Data	Various	Various		.4	N/A							
GFE												
Subtotal Support			.3	6.2		2.6		3.2				
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	Fy00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CPFF	SAIC, VA	.2	.3	1 <sup>st</sup> Qtr	.3	1 <sup>st</sup> Qtr			CONT.	CONT.	N/A
Operational Test & Evaluation	WR	NSWC, CD		.6	N/A							

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Exhibit R-3 Cost Analysis							Date: February 1999						
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N			Program Element Name & No. Surface & Shallow Water Mine Countermeasures/ 0603502N				Project Name and Number. Integrated Combat Weapons Systems/Q1233						

Tooling													
GFE													
Subtotal T&E			.2	.9		.3							
Remarks:													
Contractor Engineering Support	WR	NSWC, CD/CSS		.1	N/A	.1							
Government Engineering Support	WR	NSWC, CSS		.5	N/A	.2							
Program Management Support	WR	NSWC, CSS/NUWC		.3	N/A	.1	N/A			CONT.	CONT.	N/A	
Program Management Personnel													
Travel				.1									
Labor (Research Personnel)													
Overhead													
Subtotal Management				1.0		.4							
Remarks:													
Total Cost			.6	11.7		5.0							
Remarks:													

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Exhibit R-2a, RDT&E, N Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4	Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N	Project Name and Number. Assault Breaching Systems/Q2131

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	23.957	28.321	15.298	15.689	15.954	10.083	29.350	35.912	CONT.	CONT.
RDT&E Articles Qty										

A. A. Mission Description and Budget Item Justification: This program provides for a combination of joint US Marine Corps and US Navy projects planned to counter the threat to amphibious landing forces from known and projected foreign land and sea mines and obstacles in the shallow water, very shallow water and surf zone approaches to amphibious assault areas. It develops systems for mine sweeping and explosive mine clearance. Included are the Distributed Explosives Technology (DET), Shallow Water Assault Breach System (SABRE) and follow-on P3I efforts. Beginning FY 98 includes transition of an ongoing Advanced Technology Demonstration Systems (ATDS) – Explosive Neutralization (EN) to an acquisition program.

## (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

### 1. (U) FY 1998 ACCOMPLISHMENTS

#### (U) DET

- (U) (\$5.264) Completed fabrication of DT-IIB/OT-II systems.
- (U) (\$ .893) Completed Landing Craft Air Cushion (LCAC) integration.
- (U) (\$2.513) Continued DT-II.
- (U) (\$3.393) Began Safety tests
- (U) (\$ .225) Began system procurement preparation
- (U) (\$ .238) Began OT-II

#### (U) SABRE

- (U) (\$1.600) Continued fabrication of DT-IIB/OT-II systems.
- (U) (\$2.650) Began DT-II
- (U) (\$1.211) Began OT-II
- (U) (\$ .565) Began system procurement preparation.
- (U) (\$ .800) Began System test.
- (U) (\$ .685) Complete system integration with LCAC.

#### (U) EN

- (U) (\$ .250) Complete P3I Cost analysis and development planning.
- (U) (\$1.117) Complete LCAC integration tests
- (U) (\$2.553) Begin Autonomous craft controller component procurement and testing.

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## 2. (U) FY 1999 PLAN

### (U) DET

- (U) (\$2.338) Complete DT-II.
- (U) (\$1.500) Complete safety testing.
- (U) (\$1.249) Complete system procurement preparation.
- (U) (\$1.938) Conduct OT-II
- (U) (\$ .262) MSIII.

### (U) SABRE

- (U) (\$1.050) Complete safety testing.
- (U) (\$ .431) Complete DT-II
- (U) (\$ .375) Complete system procurement preparation.
- (U) (\$1.475) Conduct OT-II
- (U) (\$ .262) MSIII.

### (U) EN

- (U) (\$4.373) Begin Surf Zone Array (SZA) P3I development
- (U) (\$3.262) Begin Line Charge (LC) P3I development
- (U) (\$3.857) Begin Fire Control System (FCS) development.
- (U) (\$5.700) SABRE Fuze upgrade.
- (U) (\$ .190) Complete Autonomous controller development.
- (U) (\$ .059) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

## 3. (U) FY 2000 PLAN

### (U) EN

- (U) (\$6.289) Continue SZA P3I development and engineering tests.
- (U) (\$5.486) Continue LC P3I development and engineering tests.
- (U) (\$3.523) Continue FCS development and engineering tests.

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Exhibit R-2a, RDT&E, N Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4	Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N	Project Name and Number. Assault Breaching Systems/Q2131

## B. Other Program Funding Summary

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	To <u>Complete</u>	Total <u>Cost</u>
OPN #262400	-0-	8.876	18.813	18.871	29.066	20.519	13.835	8.730	CONT.	CONT.

C. Acquisition Strategy: Complete development of DET, SABRE and the Auto Pilot task of EN and transition to production in FY99. Improve the capabilities of DET and SABRE by developing the Surf Zone Array (SZA), Line Charge (LC), and the Fire Control System (FCS) tasks of EN.

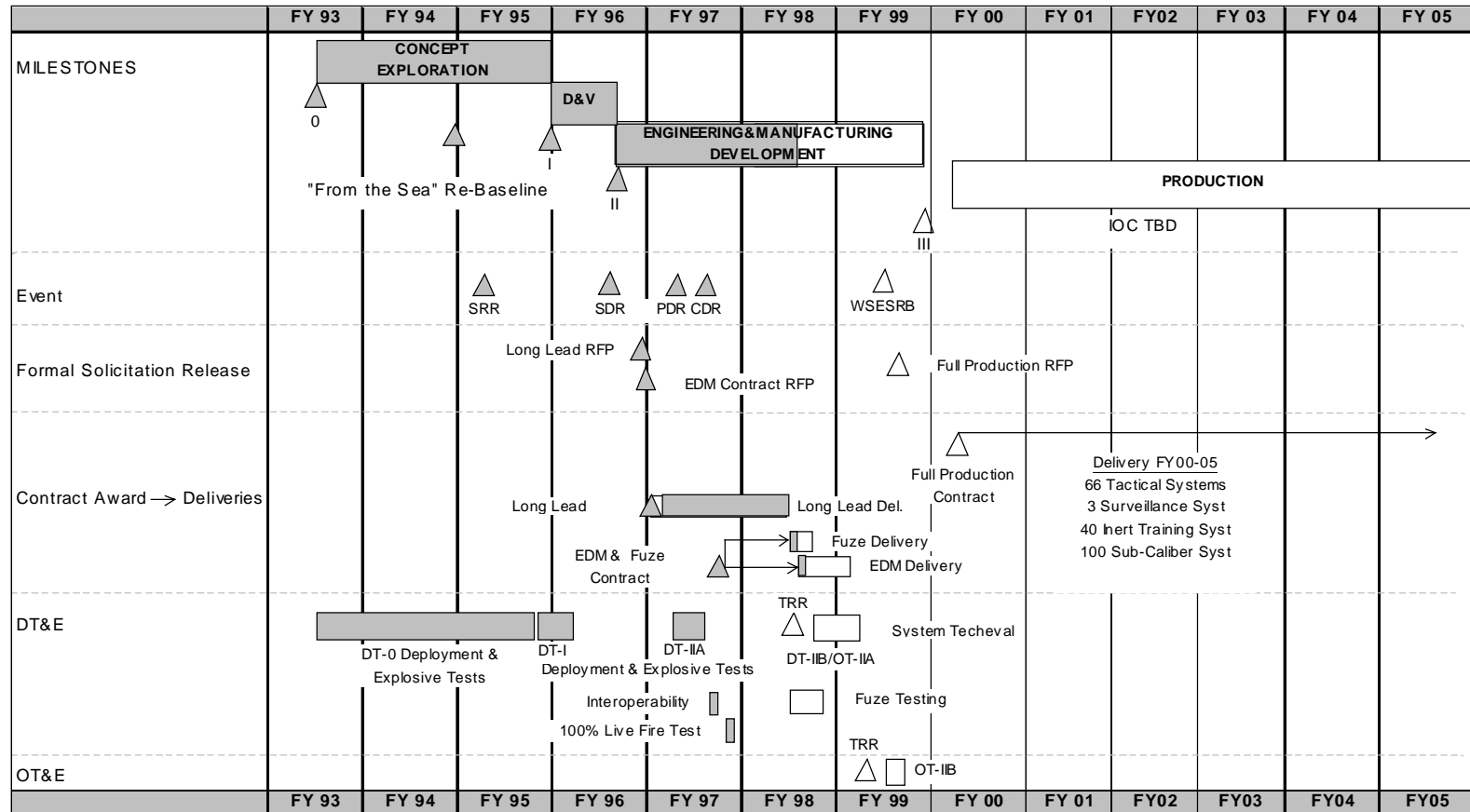
## D. Schedule Profile

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Exhibit R-2a, RDT&E, N Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4	Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N	Project Name and Number. Assault Breaching Systems/Q2131

## DISTRIBUTED EXPLOSIVE TECHNOLOGY -



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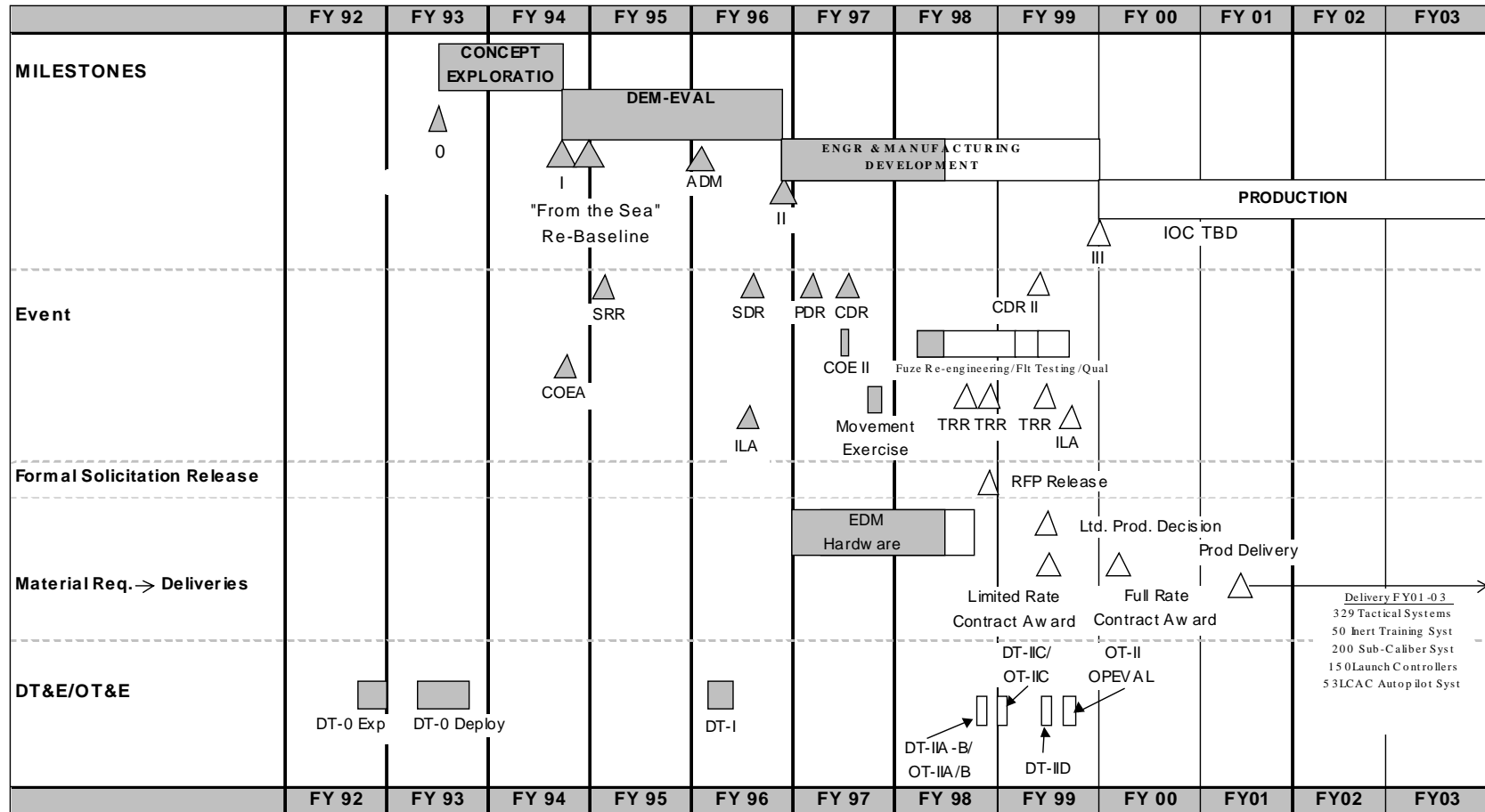
Exhibit R-2a, RDT&E,N Project Justification  
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Exhibit R-2a, RDT&E, N Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4	Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N	Project Name and Number. Assault Breaching Systems/Q2131

# SABRE

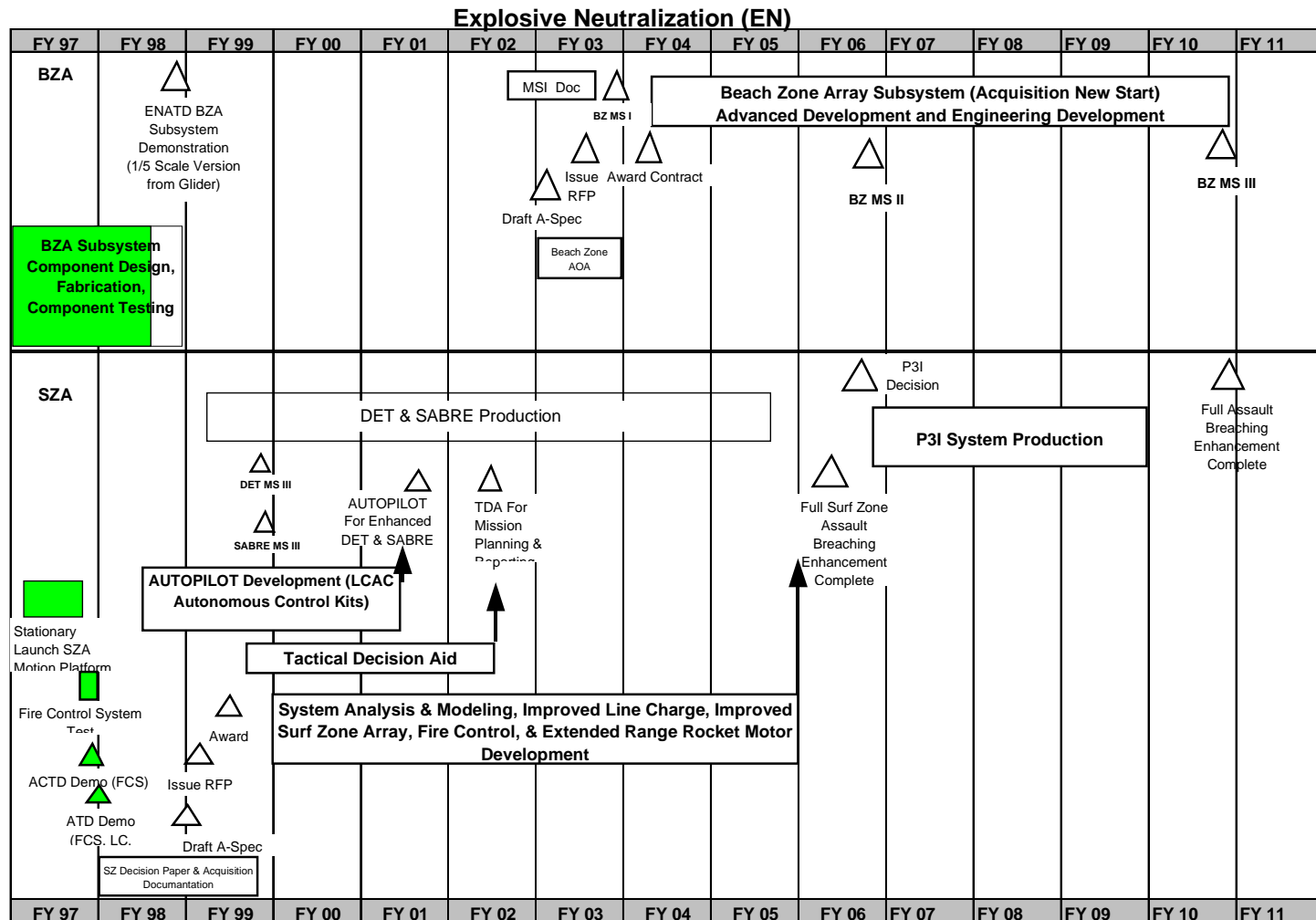


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Exhibit R-2a, RDT&E,N Project Justification  
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Exhibit R-2a, RDT&E, N Project Justification			Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4	Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N		Project Name and Number. Assault Breaching Systems/Q2131



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Exhibit R-2a, RDT&E,N Project Justification  
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Exhibit R-3 Cost Analysis			Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4	Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N	Project Name and Number. Assault Breaching Systems/Q2131	

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	WR	IH, CSS, TBD	40.2	8.9	N/A	6.3	N/A			CONT.	CONT.	N/A
Ancillary Hardware Development	WR	IH, CSS, TBD	7.1	1.0	N/A	.5	N/A			CONT.	CONT.	N/A
Systems Engineering	WR	IH, CSS	13.0	2.0	N/A	.5	N/A			CONT.	CONT.	N/A
Licenses	WR	N/A	.8	0		0						
Tooling	WR	IH, CSS, TBD	.8	.08	N/A	.2	N/A			CONT.	CONT.	N/A
GFE	WR	IH, CSS	2.6	.5	N/A	1.4	N/A			CONT.	CONT.	N/A
Award Fees	N/A	N/A	.5	0		0						
Subtotal Product Development			65.0	12.5		8.9						
Remarks: This is a combination of DET, SABRE and EN P3I work for FY99. There is more than one performing activity for most cost categories.												
Development Support Equipment	WR	IH, CSS, TBD	9.5	2.1	N/A	1.0	N/A			CONT.	CONT.	N/A
Software Development	WR	CSS	5.0	3.3	N/A	1.3	N/A			CONT.	CONT.	N/A
Training Development	WR	IH, CSS	1.5	.5	N/A	.3	N/A			CONT.	CONT.	N/A
Integrated Logistics Support	WR	IH, CSS	1.5	.6	N/A	.2	N/A			CONT.	CONT.	N/A
Configuration Management	WR	IH, CSS	1.5	1.9	N/A	.3	N/A			CONT.	CONT.	N/A
Technical Data	WR	IH, CSS	.8	1.5	N/A	1.1	N/A			CONT.	CONT.	N/A
GFE	WR	IH, CSS	.2	.2	N/A	.1	N/A					N/A
Subtotal Support			20.0	10.1	N/A	4.3	N/A			CONT.	CONT.	N/A
Remarks:												

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Exhibit R-3 Project Cost Analysis

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Exhibit R-3 Cost Analysis										Date: February 1999	
APPROPRIATION/BUDGET ACTIVITY: RDT&E, N/BA-4			Program Element Name & No. Surface & Shallow Water Countermeasures/0603502N				Project Name and Number. Assault Breaching Systems/Q2131				

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	Fy00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	IH, CSS, TBD	19.5	1.4	N/A	.85	N/A			CONT.	CONT.	N/A
Operational Test & Evaluation	WR	IH, CSS, TBD	7.0	1.0	N/A	.1	N/A			CONT.	CONT.	N/A
Tooling	WR	IH, CSS, TBD	.5	.2	N/A	.1	N/A			CONT.	CONT.	N/A
GFE	WR	IH, CSS, TBD	.3	.1	N/A	.05	N/A			CONT.	CONT.	N/A
Subtotal T&E			27.3	2.7		1.1						
Remarks:												
Contractor Engineering Support	WR	IH, CSS, TBD	2.0	.2	N/A	.1	N/A			CONT.	CONT.	N/A
Government Engineering Support	WR	IH, CSS	5.0	1.0	N/A	.2	N/A			CONT.	CONT.	N/A
Program Management Support	WR	IH, CSS	2.0	.5	N/A	.2	N/A			CONT.	CONT.	N/A
Program Management Personnel	WR	IH, CSS, NAVSEA	5.2	1.2	N/A	.4	N/A			CONT.	CONT.	N/A
Travel	WR	NAVSEA	.6	.1	N/A	.1	N/A			CONT.	CONT.	N/A
Labor (Research Personnel)	N/A	N/A	0	0		0						
Overhead	N/A	N/A	0	0		0						
Subtotal Management			14.8	3.0		1.0						
Remarks:												
Total Cost			127.2	28.3		15.3						
Remarks:												

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Exhibit R-3 Project Cost Analysis

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Exhibit R-2a, RDT&E Project Justification			Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	Program Element Name & No. Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N	Project Name and Number. Unmanned Underwater Vehicle V2094	

Cost (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Project Cost	19.315	21.398	26.925	23.974	21.702	17.361	11.377	11.076	CONT.	CONT.
RDT&E Articles Qty		1-NMRS				1-LMRS				

## A. Mission Description and Budget Item Justification:

This project was completely restructured in FY 1994 in response to Congressional direction provided in the FY 1994 DOD Appropriations Act. Specifically, the office of the Secretary of Defense and the Navy were directed to (1) establish priorities among various proposed UUV programs, (2) focus on near-term mine countermeasures issues, and (3) establish affordable, cost-effective programs. The Navy developed an overall UUV Program Plan, which was approved by ASN(RD&A) June 1994, endorsed by USD(A&T) and forwarded to Congress to support FY 1995 budget deliberations.

The UUV Program Plan establishes a clandestine, near-term mine reconnaissance capability as the Navy's top UUV priority; a long term-mine reconnaissance system as priority two; the conduct of surveillance, intelligence and tactical oceanography missions as priority three; and exploring advanced UUV designs for the future as priority four. FY 1995 Congressional language complimented the Navy Plan and fully supported priorities one and two starting in FY 1995.

The UUV project funds development of the first three priorities of the UUV Program Plan. The Near-Term Mine Reconnaissance System (NMRS) will be a minehunting UUV system launched and recovered from an SSN-688 class submarine and will be capable of mine detection, classification, and localization. One NMRS Operational Prototype (OP) system will be delivered to the Fleet in FY 1999. No further production of the NMRS is planned. Since the NMRS is viewed as a stop-gap capability with a life expectancy of approximately 6 years, the Long-Term Mine Reconnaissance System (LMRS) will be developed to provide a robust, long-term Fleet capability to conduct clandestine minefield reconnaissance. The first LMRS will replace the NMRS as the NMRS is retired and several Long-Term Mine Reconnaissance Systems will be procured beginning in FY 2003. The Navy's third priority is the conduct of surveillance, intelligence and tactical oceanography. To meet this requirement the Navy will develop a Mission Reconfigurable UUV (MRUUV) system that is capable of being reconfigured to perform many different missions. This system will use the same vehicle energy section and structure, but replace the payload with sensors appropriate to meet specific mission requirements.

The Near-Term Mine Reconnaissance System (NMRS) program will design develop and test one operational prototype system. The system will be tested in FY98 and FY99. At the conclusion of testing, the NMRS will be delivered to the Fleet and will remain in Fleet use until delivery of the first LMRS.

The Long-Term Mine Reconnaissance System (LMRS) is currently in development. The fabrication of a prototype system will begin in FY01. This prototype system will support test and evaluation, and then in FY03 will transition to fleet operations.

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Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	Program Element Name & No. Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N	Project Name and Number. Unmanned Underwater Vehicle V2094

## (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

### 1. (U) FY 1998 Accomplishments:

- (U) (9.003) Priority 1 (NMRS): Completed factory testing and system integration. Conducted at-sea testing of NMRS. Began preparations for Operation and Support activities of the Prototype system.
- (U) (10.312) Priority 2 (LMRS): Awarded and executed two Detailed Design contracts. Conducted product development risk mitigation.

### 1. (U) FY 1999 Plan:

- (U) (7.133) Priority 1 (NMRS): Complete SSN testing. Achieve Initial Operational Capability (IOC). Deliver NMRS to Fleet for operational use. Complete preparations for Operation and Support of the Prototype System.
- (U) (13.816) Priority 2 (LMRS): Complete LMRS Detailed Design and conduct the LMRS Critical Design Review. Commence preparations for award of the LMRS Development Phase contract. Conduct product development risk mitigation.

(U) (\$ .449) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

### 1. (U) FY 2000 Plan:

- (U) (2.215) Priority 1 (NMRS): Begin Operation and Support of the prototype system.
- (U) (24.71) Priority 2 (LMRS): Award development contract and begin development phase.

### 1. (U) FY 2001 Plan:

- (U) (2.229) Priority 1 (NMRS): Continue Operation and Support of the prototype system.
- (U) (21.745) Priority 2 (LMRS): Continue development phase and begin fabrication of prototype system.

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Exhibit R-2a, RDT&E Project Justification			Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	Program Element Name & No. Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N	Project Name and Number. Unmanned Underwater Vehicle V2094	

B. Other Program Funding Summary:										
	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To Complete</u>	<u>Total Cost</u>
OPN PE 0204281N; Line Item 217100	0	0	0	0	0	25.273	53.300	49.022	CONT.	CONT.
OMN PE 0204281N										
1B2B	0	0	0	0	0	.700	5.700	6.400	CONT.	CONT.
1D3D	0	0	2.305	2.086	2.439	-.025	-.027	-.029	CONT.	CONT.

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Exhibit R-2a, RDT&E Project Justification		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	Program Element Name & No. Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N	Project Name and Number. Unmanned Underwater Vehicle V2094

C. Acquisition Strategy: One Operational Prototype NMRS is under procurement via sole source contract. No further NMRS production is planned. The LMRS acquisition strategy is structured to maximize competition during system development. In FY97 three one year contracts were awarded for development of a preliminary design. In early FY98, two of the preliminary design contractors were selected to continue development through a critical design review. Selection of these two contractors was based primarily on the contractor's performance during the preliminary design contract. In early FY00, one of these two contractors will be selected to complete the LMRS design, fabricate a prototype system and support in-water testing. Procurement of the LMRS will be sole source to the final development contractor. A competitive procurement is not cost effective due to the limited (6-12) number of systems planned for procurement.

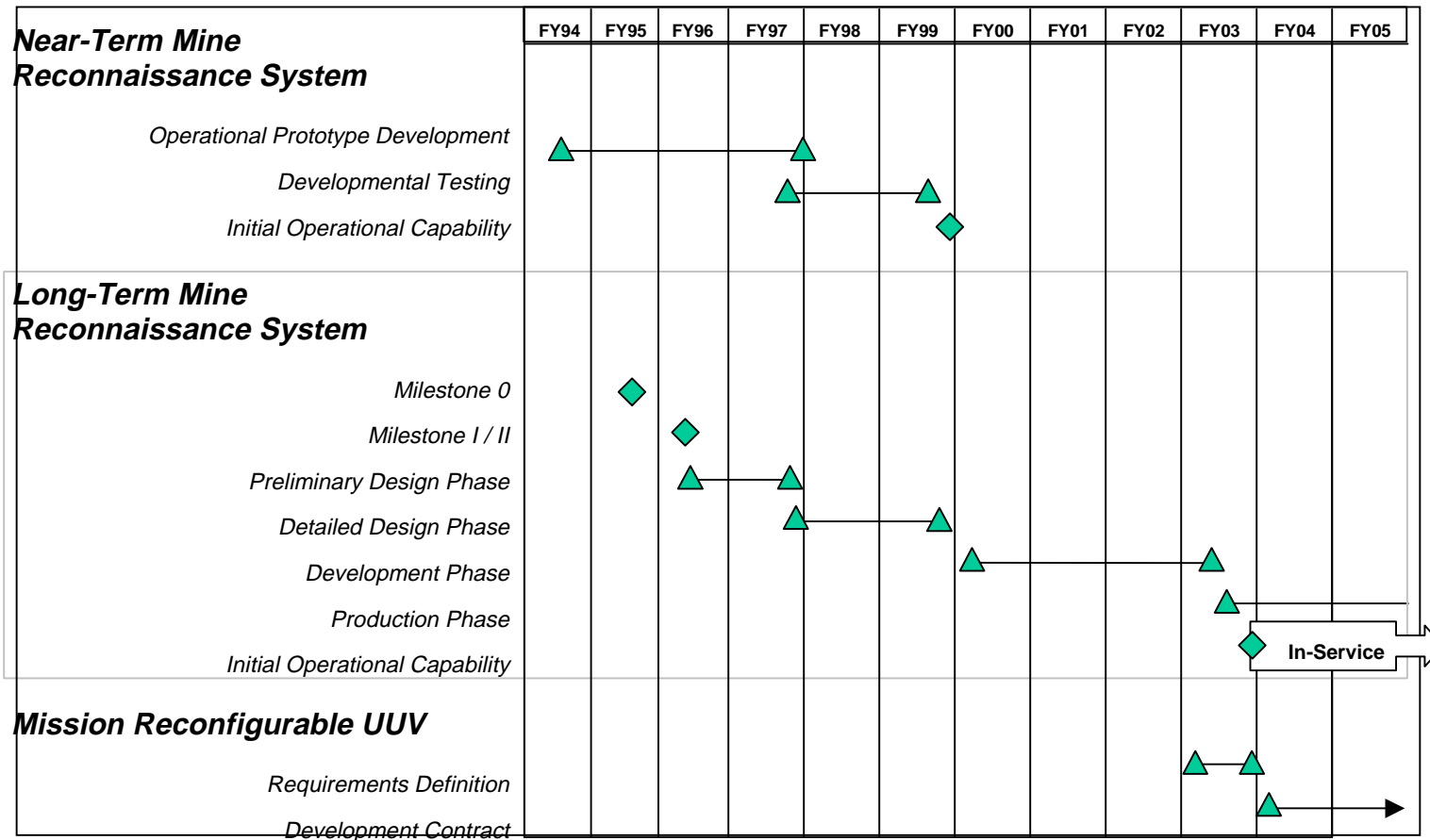
The MRUUV project will use competitive procurement to award an RDT&E contract for the development and prototyping of the system. Procurement and operation is not planned within the FYDP.

D. Schedule Profile: See next page.

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Exhibit R-2a, RDT&E Project Justification			Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	Program Element Name & No. Surface and Shallow Water Mine Countermeasures Program Element (PE) 0603502N	Project Name and Number. Unmanned Underwater Vehicle V2094	



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Exhibit R-2a RDT&E Project Justification  
(Exhibit R-2)

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	PROGRAM ELEMENT NAME AND NUMBER: Surface and Shallow Water Mine Countermeasure 0603502N	PROJECT NAME AND NUMBER Unmanned Underwater Vehicle V2094

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development (NMRS)	SS/CPAF	NGC	44.554	1.598		0				0	46.152	50.478
Primary Hardware Development (LMRS) Detailed Design Contract Development Contract	CPAF CPAF	NGC and Boeing North America	19.876 0	11.733 0	N/A# N/A#	0 21.911	N/A# 11/99			0 CONT.	31.609 CONT.	33.089 CONT.
System Maintenance (NMRS)	SS/CP	NGC	1.987	2.562	N/A#	.914	03/00			CONT.	CONT.	CONT.
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees**(NMRS)			3.047	.864	N/A		N/A				3.911	
Award Fees *(LMRS)			.575	.390	N/A		N/A				.965	
Subtotal Product Development			70.039	17.147		22.825				CONT.	CONT.	
Remarks: : * Actual award fee awarded in FY98; award fee pool amount for FY99. The award fee structure for the final design contract (award 11/99) has not been determined. ** Actual award Fee awarded through award fee Period 10; award fee Pool amount for Period 11.  # Multi-year contracts incrementally funded; therefore, Award Date is N/A.												

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Exhibit R-3 Project Cost Analysis  
(Exhibit R-3)

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	PROGRAM ELEMENT NAME AND NUMBER: Surface and Shallow Water Mine Countermeasure 0603502N	PROJECT NAME AND NUMBER Unmanned Underwater Vehicle V2094

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total <u>PYs</u> Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support												
Remarks:												
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	Fy00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E												
Remarks:												

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Exhibit R-3 Project Cost Analysis  
(Exhibit R-3)

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY: RDT&E/4	PROGRAM ELEMENT NAME AND NUMBER: Surface and Shallow Water Mine Countermeasure 0603502N	PROJECT NAME AND NUMBER Unmanned Underwater Vehicle V2094

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date			Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	CPFF	JHU/APL & ARL/UT	4.808	.396	N/A*	.470	N/A			CONT.	CONT.	
Government Engineering Support	WR	Various	10.621	3.179	N/A	2.948	N/A			CONT.	CONT.	
Program Management Support	Various	Various	2.460	.636	N/A	.666	N/A			CONT.	CONT.	
Program Management Personnel												
Travel				.040	N/A	.042	N/A			CONT.	CONT.	
Labor (Research Personnel)												
Overhead												
Subtotal Management			17.889	4.251		4.126				CONT.	CONT.	
Remarks * Multi-year contracts incrementally funded; therefore; Award Date is N/A.												
Total Cost			87.928	21.398		26.951				CONT.	CONT.	

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Exhibit R-3 Project Cost Analysis  
(Exhibit R-3)

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